KANSAS MEDICAL JOURNAL.

VOL. IX. TOPEKA, KANSAS, SATURDAY, APRIL 3, 1897. No. 14.

ORIGINAL ARTICLES.

The Sputum in the Diagnosis of Pulmonary Tuberculosis.

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Reprinted from The Denver Medical Times.

The macroscopic characters of the sputum in pulmonary phthisis are suggestive but not distinctive. The amount of expectoration is usually very little in the incipient stage of the disease. If large cavities are present the daily quantity may exceed a pint. More is spit up on rising in the morning than at any other time of day.

The consistence of sputa varies greatly. At first perhaps homogeneous and almost purely mucoid, they generally become more opaque and purulent as the malady progresses. The so-called nummular sputum consists of greenish-gray, muco-purulent coin-shaped masses that sink to the bottom of the containing vessel; they are rarely seen except when considerable cavities exist. Small white cheesy particles are of common occurrence in the expectoration of phthisical patients. These usually contain tubercle bacilli and elastic fibers, but cannot be distinguished by the unaided eye from similar masses originating in the crypts of the tonsils or in nasal and bronchial mucous cysts. Pea-sized concretions of calcium carbonate arising from calcification of caseous matter in tubercular cavities are very rarely observed.

The degree of opacity of a specimen of sputum depends upon the number of contained leucocytes. The common greenish-yellow hue is due mainly to pus. A bluish tint is rarely observed and is owing to the presence of ferrous phosphate. Tuberculous sputum is frequently tinged with blood, the color ranging from bright red to brown according to the length of time since extravasation took place. In persons who have to inhale much dust or smoke, black or gray carbon particles are constantly present in the expectoration.

As to odor, most sputa in the early stages of consumption have none. When ulcerative processes are established a sweet stench is observed, which is not so disagreeable, however, as that of the sputum in gangrene and putrid bronchitis.

The pathognomonic sign of tuberculosis is the tubercle bacillus, discovered by Koch in 1882. This germ is nearly always to be found in the sputum in the earliest period of the pulmonary form of the disease—a period when diagnosis is at once most difficult and of the greatest importance to the patient. It is true that the micro-organism has been met with occasionally, and for obvious reasons, in the secretion of the upper respiratory tract of perfectly healthy individuals, but the fact remains nevertheless that the finding of the bacilli in the sputum is the first and most certain sign of tubercular malady. A miscroscopic scrutiny of the sputum in the diagnosis of pulmonary tuberculosis is as rational as an examination of the urine for nephritis or of the blood for malaria. That all patients exhibiting the specific bacterium do not succumb to the disease is further explained by the frequent instances of post mortems that reveal spontaneously healed tubercular lesions which had never been suspected. The number of bacilli, however, is not a reliable standard as to the advances of the disorder. In the

incipient stage of the rapidly progressing form of consumption the bacilli are often very numerous, while they may be extremely scanty in the third stage when large cavities have been cicatrized. It is evident, moreover, that the number to be seen must vary with each particular drop of sputum, with the thickness of the layer examined, and with other extraneous factors.

The tubercle bacilli differ from most other micro-organisms in their low affinity for the ordinary staining reagents and in the tenacity with which they retain the stains when once absorbed. The technique of the preparation of tuberculous sputum for microscopic examination is comparatively simple and is easily within the reach of any intelligent physician who has the necessary time and apparatus for such work.

The method that the writer usually employs is to place the sputum (that of the morning or of all day preferable) in a porcelain dish with twice as much water and ten drops of a 10 per cent. solution of potassium hydrate. The mixture is set over the spirit lamp and boiled until perfectly liquid and homogeneous, more water being added as may be needed to preserve fluidity. After cooling, the lower stratum of the liquid is poured into centrifugal tubes, which are revolved for five minutes at the highest attainable speed. A drop of the sediment thus obtained is pressed out between two clean cover-glasses and allowed to dry thoroughly under a large watch crystal. The film is then fixed by passing the cover-glass with the sputum layer upward three times slowly through the alcohol flame and is now ready for staining.

Two solutions are employed by me for this purpose. The first consists of one part of 10 per cent. alcoholic solution of fuchsin, and nine parts of an aqueous 5 per cent. solution of carbolic acid. This carbol-fuchsin stain loses strength on standing and should be made up fresh every two weeks. The second, or counter, stain has two parts of methyl blue to a hundred of 25 per cent. sulphuric acid.

The cover glass held with the forceps film uppermost is covered with a few drops of carbol-fuchsin and is kept at a little distance above the spirit flame until the stain comes to a boil—burning should be avoided. This process aids the entrance of the staining fluid into the protoplasm of the bacilli. The cover glass is next washed with water and then treated with a few drops of the counter stain, which is left on for about a minute, or until the albuminous film appears quite blue. After washing away the excess of methyl blue, the cover glass is inverted on a glass slide and dried as to its edge and upper surface with clean soft filter paper. A drop of cedar oil (index of refraction the same as in glass) is now applied to the center of the cover-glass, and the specimen is ready for the microscope. The writer uses an A ocular and a 1-15 oil immersion objective, obtaining in this way when the draw-tube is pulled out a linear magnifying power to 1,200 to 1,500 without the eye fatigue induced by higher oculars. The Abbe condenser and the mirror are carefully adjusted in the best diffused light obtainable and with an open diaphragm. Upon the conclusion of inspection of one or more cover glasses, the cedar oil is cleaned off gently from the lens with a drop of chloroform and a piece of soft linen cloth.

Thus stained the tubercle bacilli appear as red rods while all else looks blue. These rods are usually slightly curved with rounded ends. Though sometimes unbroken, more often they resemble a close chain of colored beads with colorless interspaces due possibly to spores. The rods are from one to five mikrons in length—one-fourth or one-half the width of a red blood corpuscle—and about one-fifth of a mikron in diameter. They are often in groups of two forming X's and V's.

There are only three other varieties of bacilli that in any way resemble tubercle bacilli in their reaction to the staining fluids above mentioned. These are the bacillus of smegma and cerumen, that of the primary sores of syphilis and leprosy bacillus. Obviously none of these are to be found in true sputum. To further differentiate, however, it may be stated that the smegma bacillus is very quickly decolorized by alcohol; that of

syphilis by strong sulphuric acid.

A single negative examination for tubercle bacilli by no means precludes the existence of pulmonary tuberculosis. In a case suspected to be tuberculous in nature repeated trials ought to be made until the proof is one way or the other. As mistakes frequently occur from the repeated use of cover glasses not thoroughly cleaned—a difficult task—the writer makes use of each cover glass but once and then destroys it.

Next to the pathognomonic bacilli elastic tissue from the parenchyma of the lungs is of the highest import. Its presence in the sputum always indicates some destructive process, though not necessarily phthisis. These fibers appear as beautiful wavy tendril-like light yellow threads, differing much in length and breath. When they show an alveolar arrangement their pulmonary source is certain, whereas the long slender fibers from the bronchi may be confounded with those of meat food. Elastic fibers when present in the sputum are best obtained by the boiling and settling process above described. A quicker way is to crush the sputum between two pieces of window glass four to six inches square. If one of the squares is painted black on one side the whitish cheesy particles can be picked out readily and subjected to a low power of the microscope.

Numerous other objects are to be seen under the microscope in pulmonary tuberculosis, none of which, however, have more than a confirmatory diagnostic value. In cases of mixed infection streptococci and staphylococci are abundant. Mould plants from the mouth, particularly leptothrix and oidium albicans, are not uncommon, especially in children. In chronic cases with cavities sarcinæ and aspergilli are sometimes found.

Leucocytes, mostly polynuclear, are encountered in varying numbers in every sputum. They often contain fat drops and pigment particles. Epithelial cells from the air vesicles are usually quite numerous in the early stages of pulmonary consumption, but are also present in any expectoration. These alveolar cells are roundish and usually granular and are sometimes more or less fatty, myeline or pigmented in appearance. They vary from 20 to 50 mikrons in diameter. Cylindrical epithelial cells in profusion indicate a morbid involvement of the upper respiratory tract. The ciliæ are usually no longer visible, and the cells themselves are frequently so changed as to be difficult to distinguish from those of the alveoli. A comparatively large number of red blood corpuscles is the rule in the sputum of phthisis. They are generally more or less decolorized and altered in form.

The sharp-pointed octahedral crystals of Charcot and Leyden are only of rare occurrence in tuberculous sputum. Colorless, transparent cholesterin plates with broken corners and ragged edges are occasionally to be seen. Sheaves of long narrow fatty acid needles are rather common. Hematoidin crystals and amorphous granules are frequently present free or in the leucocytes after extravasations have taken place, and are readily recognized by the reddish color. All of the above elements except the bacteria are best prepared for examination by sedimentation without boiling and by staining simply with methyl blue. A power of 400 or 500 is sufficient to reveal them.

In conclusion, the writer would call attention to the serious results which may befall the examiner and others if sputum is allowed to dry and become mixed with the atmospheric dust.

The question of precedence between the State and Federal quarantine officers of San Francisco, Cal., has caused a clash between the State and the Nation. The Chamber of Commerce, and other organizations interested in the city's trade, will probably take the matter to the Legislature.

The Anti-Vivisection Society is at odds with the Boston medical schools. They claim that a large number of animals are constantly being vivisected at Harvard and at the Boston University Medical School.

Kansas Medical Journal.

PUBLISHED WEEKLY

BY THE UNION PUBLISHING COMPANY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per annum, in advance..... $1 00
Single copies..... 15 cents

Subscription may begin at any time. The safest mode of remittance is by bank check or postal money order drawn to the order of the undersigned. When neither is accessible, remittances may be made at the risk of the publishers by forwarding in Registered Letter. Address

UNION PUBLISHING CO.,
TOPEKA, KAS.

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Topeka, Kansas, Saturday, April 3, 1897.

A Joint Session of the Three Schools.

HADDAM, KAS., March 31, 1897.

Editor Kansas Medical Journal.

In your issue of March 13, I find the following editorial:

"It has been suggested that a joint meeting of the three State societies, the Regular, Homeopathic and Eclectic, be held in Topeka one day during the regular sessions. No arrangements have yet been made, and it is very uncertain if it can be done satisfactorily."

Just below this I find another editorial stating that the Legislature will not pass a medical bill during this session.

It appears to me that it is very easy to read between the lines of these two items the reason why our legislatures do not pass medical laws. The laity have been interested spectators in the jealous rivalry that has existed between these three schools ever since their origin. They have manifested no desire to mollify the antagonism which exists between them, but are inclined to urge it on, as they think that the contest of schools may result in benefit to them.

While this spirit of enmity exists between the schools, how can the laity look with any degree of favor upon legislation for a profession when the brethren (?) are engaged in a continual warfare with each other? The enmity that exists between the three representative schools of medicine brings us justly into contempt with the laity, and as long as they tolerate this narrow minded and childish policy we will reap the rewards of our own folly by being let severely alone as far as legislation is concerned.

What is there to fear about an eclectic or a homeopathic physician, who has graduated, and is legally qualified to practice medicine, and who occupies an honored position in society, and demonstrates his ability by actually meeting with as fair success as his regular brother? Do they not study anatomy, chemistry, physiology, pathology, etc., just as the regulars do? If their materia medica and therapeutics differ in some respects from the U. S. P., does that disqualify them? If small doses expatsiates a homeopath, then let us also banish the regular and scholarly Aulde, who recommends frequently, infinitesimal doses.

Let us also expel those heterodox members of the regular profession who keep "Lloyd's Specifics" on their shelves and surreptitiously assert that they are splendid remedies.

Is it not time to stop this nonsense? About the only difference there is between the so-called schools of physicians is the name. I have counseled, ate, slept and associated with eclectic and homeopathic physicians, and have not found them obnoxious in any manner, but agreeable and pleasant gentlemen to meet.

What is to prevent Kansas, a leader in all reforms, from taking the initiative, and undertaking to break down the barriers of

prejudice that exists (on the surface mostly) between these three schools, and uniting in one brotherhood, with one common aim for the amelioration of the ills of life.

When we cease our contemptible "hair pulling," the laity will respect the medical profession, and as a body united for one common purpose we would be irresistable, and could secure the much needed medical legislation or anything else we want.

By all means let us have a joint session. It will secure us one fare rates at least, and many other good things.

Mr. Editor, would it not be a good plan to open up your columns for short articles on this question, so that the pulse of the regulars might be felt.

H. M. OCHILTREE, M. D.

THE annual commencement exercises of the Kansas Medical college will be held at Library Hall, next Tuesday. The past year has not only been the most successful and satisfactory in the history of the college, but it has proven that a successful college can be maintained in a small city. The enrollment for the year '96-97 was ninety-two. This in spite of the many disadvantages which the college had to fight against. There are twenty-two in the graduating class as follows:

George Lewellyn Baughman, Charles Cottrel Stillman, Sarah Elizabeth McIntyre, Robert Ewing McCandless, William John R. Mathews, William Leonard Welsh, William Alfred Adams, Samuel Alton Johnson, Andrew Jackson Smith, Charles Joseph Cahill, Wentworth Lee Irwin, Harriet A. Spaulding, Carl Frederick Haish, John Walter Simmons, John Lawrence Work, Everett M. Brockett, Cassius Millard Clay, Dorothy Lee Smith, Charles Hammond, Tarlton A. Hood, MaBelle True, Julia Niles.

The program for the exercises will be as follows:

Overture—"The Ram," Stahl.
Invocation—Rev. Linus Blakesley.
Mazurka—"Caprice," Dorn.
Introduction—J. E. Minney, M.D. (master of ceremonies).
Address—Rev. Dr. G. M. Herrick.
Medley—"A Gay Time," Beyer.
Faculty Address—S. E. Sheldon, M.D.
Dance—"Cubaine," Messer.
Valedictory Address—Everett M. Brockett
March—"Coney Island," Levi.
Conferring Diplomas—J. C. McClintock, M.D. (president).
Music.

Among the class of graduates this year are several men of experience and age. There can be no fear that they will not do justice to their patients and honor to the institution which graduates them.

Most all of them have been put to the test in actual practice and favorable reports of their successful work has been received. With an equal amount of exertion on the part of the officers of the college there is no reason why a class of twice the number can not be enrolled next year.

MISCELLANEOUS.

New York Academy of Medicine—Section in Orthopædic Surgery.

Meeting of March 19, 1897.

A Case of Wry Neck.—Dr. T. H. Myers presented a girl fifteen years of age who, in last August, after having been heated by hard playing the day before, found her head fixed in a certain position and that attempts to change the position caused pain. Three or four days subsequently she began to have pain at night in the left side of the neck posteriorly. This has been the condition till the present time. Her general health is good. There is tenderness in the left suboccipital region. At times she supports her head with her hands to relieve pain. There is no headache and no pain on jolting or jarring. There is no rigidity of the superficial muscles on either side of the neck. Flexion and extension of the head are normal. The chin is rotated to the right ten degrees and the head is inclined a

little toward the left shoulder. Attempts to correct this position cause reflex spasm. The first and sixth cervical spinous processes are prominent. No prominence can be felt anteriorly on examining the throat. There is no lateral curvature. She had never had rheumatism or any kind of joint disease. Leaving out of the question the inception of the disease, almost all the features of the case were those of cervical caries and Dr. Myers intended to treat the patient for this trouble, but he wished to be able to make a positive diagnosis between this condition and rheumatism of the neck.

Dr. S. Ketch said that it was not always possible to entirely eliminate suspicions of rheumatism in cases which it is necessary to treat as vertebral caries. In the present case he considered the reflex muscular spasm, the limitation of motion and the prominence of the vertebræ as sufficient to determine the diagnosis. He believed the trouble was in the cervical vertebræ not lower than the third but did not think it was necessarily tubercular.

Dr. R. Whitman thought the trouble was not tubercular. Although the atlas was prominent it was not enough so to have any significance, there was no infiltration and the motion is restricted in some directions but not in all. Occipito-atloid disease impaired rotation. He thought it was probable that the symptoms had followed strain or injury and that the attitude was causing continuous pain. He would rectify the position and approved the treatment which had been proposed.

Dr. A. B. Judson said that it had sometimes been his experience to refer patients for general treatment, on the ground that the trouble was not local bone disease, and have clear symptoms of osteitis appear at a subsequent period. The obscurity of the symptoms in osteitis of the cervical verterbræ occasionally made early diagnosis, as in the present case, far from easy. He though the mechanical treatment was required in this case and that it was probably a case of cervical caries.

Dr. V. P. Gibney would rather suggest that this might be a case of irritable spine. He would employ active counter-irritation with fly blisters or the actual cautery and treat the patient as a neurotic. There is often irregularity of the spinal column even even when no pathological condition exists.

A Case of Hip Disease.—Dr. Myers presented a boy, 12 years of age. When he was 7 years old he developed fever and chills and a large abscess appeared at the right hip with œdema of the limb. An incision showed that five inches of the shaft of the femur were denuded of periosteum. Exsection was not performed and the long hip-splint had been worn till the present time. The sinuses continued to discharge and on December 29, 1896, they were explored and found to proceed from cloacæ on opposite sides of the femur below the trochanter. These were enlarged and sequestra, from half an inch to an inch and a half in length, were removed. On February 3, 1897, the sinuses had closed. The affected limb was three-quarters of an inch longer than the other. There was no pain and he walked well without the splint. There was very wide motion in flexion and extension. The case showed that conservatism in regard to excising bare bone was necessary and advisable in these cases of osteomyelitis. The periosteum in this case was elevated far beyond the limits of the central, necrosis and an exsection could not have secured a result as good as this.

Dr. Judson said that in its duration and results the case resembled ordinary hip disease, but a very exceptional feature was the bony lengthening, which was the more remarkable because the trochanter was far above the line.

Dr. L. W. Hubbard recalled but one case of ordinary hip disease in which careful measurements showed absolutely no bone shortening.

Dr. Whitman recalled a case in which the patient had suffered for years from necrosis of the femur with an inch and a half of lengthening. The bone was broken accidentally and its non-union was followed by amputation.

Anaurysm Simulating Spinal Disease.—Dr. Ketch related a case in which the patient,

a woman 37 years of age, had been advised to seek mechanical treatment for spinal disease. The principal symptoms were radiating pain in the back, loss of flesh, aphonia and occasional dyspnœa. Examination revealed a pulsating tumor at the lower part of the carotid triangle and a decided aneurysmal bruit.

A Specimen of Acetabular Disease.—Dr. Gibney related the case of a boy 5 years of age, who had had symptoms of left hip disease for four month. There were marked flexion and abduction, limited motion and an abscess in the gluteal region. After being on an inclined plane with a weight and pulley for a month, there was no improvement and an incision was made above the trochanter and the capsule was divided. The femoral head appeared to be normal and was not removed. In the acetabulum were broken down bone and erosion, and considerable pus was present. The acetabulum was curetted, the sinuses were drained and the wound was irrigated and packed with iodoform gauze but not sutured. Pneumonia developed two days after the operation and the patient died one month later. Both lungs were found in a state of mottled red and gray hepatination were areas of atelectasis. On section no foci were found in the head or neck of the femur. The articular surface of the head had been eroded since the operation. The specimen represented an aggravated instance of acetabular disease.

A Plea for the More Thorough Study of Constipation.

M. L. Ravitch. A.M., M.D., in Cincinnati Lancet-Clinic.

One of the most baneful results of the rapidity with which we, at the close of the nineteenth century, hasten through life, from a medical standpoint, is constipation. In our haste to prosecute business, to acquire wealth, to attain standing in the community, we neglect ourselves physically to the extent of acutal abuse, and of all functions those of the alimentary canal suffer most. As a nation we eat too rapidly and too much, and in the rush of business we postpone attention to the bowels to a more convenient hour, which, unfortunately, never comes until their sensitiveness, by frequent distention, is blunted, or resort to cathartics and soon become victims of habitual constipation.

Volumes have been written upon this subject, innumerable remedies and procedures have been suggested; still the universality of the disease increases. Men consider an evacuation of the bowels once in three or four days "regular," and women think once in ten or twelve days proper and often enough for health, or at least for convenience. I do not pretend to discuss the condition of all its phases, but to dwell upon some particular points which well deserve attention.

Physiologically, the liver is a filter. Beyond its glycogenic function this is its most important sphere of usefulness, since dependent upon it are duodenal digestion and the maintenance of peristalsis, bile being both a secretion and excretion. This eliminating or filtering property of the liver has been demonstrated under artificial as well as natural conditions. Poisonous alkaloids injected into the portal circulation acquire twice the amount to produce toxemia as when introduced in the general circulation. The symptoms resulting from the injection of a given quantity of nicotine or strychnine in the arm require twice the amount if introduced per portal circulation. This filtering, oxidizing or eliminating function is as marked when the organ has to deal with leucomaines produced in the body as alkaloids introduced from without.

Bile is an excretion, since it contains leucomaines produced through metabalism incident to nutrition. These products filtered, as it were, from the blood, together with indigested or indigestible matter from the stomach and duodenum, are poured into the colon for final elimination. Retention of this mass of excreta constitutes constipation. The point to which I call attention is one of the results of retention, viz., absorption. Excreta consists not only of cellulose and other digestible material, but a variety of leucomaines which enter the bowels

through the bile, the most important of which are xanthocretinin, cryskretinin and pseudoxanthon. These are alkaloidal products of normal metabolism, and are thus distinct from ptomaines. Chemically, they closely resemble ptomaines in that they are readily crystallizable, soluble compounds, and are poisonous when retained in the system. Danger of infection arises from two sources: In the first place, since leucomaines are soluble, absorption takes place from the bowels during retention; at the same time, with absence of a free exit for this matter, a condition of stasis arises in the liver itself, which cripples its function and allows a quantity of these products to remain in circulation, very much like a sponge saturated with water—it is unable to take up more until emptied.

The symptoms arising from this condition are mental lethargy, headache, lassitude, drowsiness, nervous irritability, a dry, feverish skin, furred tongue, and a sense of weight about the body. These symptoms are often recognized as an individual group, or as a cloak rendering obscure and complicating conditions which are of themselves all pathogenic. Such a condition is not mere biliousness, it is more; it constitutes a disease of itself—a toxemia. It differs from hepatic congestion by its insidious onset, its chronicity and tenacity. Relief is not promptly afforded by chologogues, since not only the liver, but the entire system, is loaded with these products, and it requires time and active measures to eliminate them and restore the organs to the natural tone. The condition is closely analogous to uremia, although not so pronounced in its cerebral expressions. The condition bears a similar relation to constipation as does uremia to retention—a step beyond, a sequel; and it as much entitled to a distinct name and special treatment as is uremia. This condition is constant among men of sedentary and irregular habits, but more particularly among women who sew or who confine themselves too closely to the house from any cause. Such people sleep poorly, eat little and digest it indifferently; they are mentally lazy, their brains do not act promptly or energetically; they have cold extremities, and are always cold; in fact, all functions are deranged as a result of an impure and improperly oxygenated pabulum; they are always sick; they are pessimistic, life is a burden to them and all with whom they come in contact.

When this condition is recognized the treatment presents itself, and may be summed up in one word—elimination. Such people should drink plenty of water—at least two quarts daily. This is one of those conditions requiring hygienic rather than medical treatment. With such people sunlight, fresh air, exercise and water will accomplish much; without them they are never cured.

Hints on the Preparation for an Operation in Country Practice.

Evan O'Neil Kane, M.D., in Cincinnati Lancet-Clinic.

While many conveniences are to be desired and many percautions should be taken, but few of these are absolutely essential.

First, let us consider the preparation of the room in which the operation is to be performed. That which is most necessary is a good light. When operating in private practice I do not generally choose a north light, for with the small windows of many a cottage or farm-house this light is seldom bright enough. I prefer to utilize a window on the southern exposure, pinning a thin towel or newspaper across it if the direct rays of the sun are likely to prove too glaring.

Next in importance is an ample supply of heat. A room with a fire in it is to be preferred to one heated by steam or hot water, as the amount of warmth can be made much more intense in this way. The next best thing is to have a room adjoining the stove-heated room, as we may thus have hot water ready at hand for use at any moment. A generous amount of heat is necessary where a laparotomy or any protracted operation is contemplated. Intense heat reduces the danger of shock and makes protracted anesthesia less hazardous.

I need hardly impress the importance of

cleanliness in this day of aseptic surgery. As means to this end the carpet should, if practicable, be removed, so also with rugs and mats, while the curtains should be taken down and all upholstered articles of furniture covered. The apartment should then be rid of as so much of accumulated dust and dirt as possible. Observe that I do not say that it should be swept. Nothing could be worse, for to sweep means to raise a cloud of dust and fill the air with innumerable germs—the accumulation, perhaps, of years—that have been lurking in cracks and corners undisturbed for years. To sweep such filth up into the light of day only means to remove from the room an uncertain residue; much of it remains suspended in the air or clinging to walls and ceiling ready to descend into the field of operation as soon as it is prepared. The safest method to employ is that of going over everything, walls and ceiling as well as floor, with a damp cloth, only aiming to remove the less firmly adherent and volatile particles of dirt which could be set in motion if disturbed. As for the rest of the dirt, as it is impossible to remove it all, one only makes bad worse by stirring it up. If time and opportunity do not permit of the removal of the carpet, wet sheets or newspapers should be spread over the floor to prevent the dust from rising.

So much for the room itself, and now as to its equipments. The operating-table must first be considered. Do not say that any table will do. Possibly it may be the only one procurable, but so much worse for the comfort of the operator. Too large or too wide a table will nearly break the backs of the surgeon and assistants, uselessly fill the room and be too cumbrous to handle. A long narrow table, or, better, two short ones placed end to end, will be preferable. It must not be forgotten that the Trendelenberg position can be readily obtained by placing a chair upside down upon the table. Two small stands or tables should be secured, one for basins and sponges, the other for instruments. The operating-table ought to stand in front of the window and the two stands be placed on each side. A large boiler or other receptacle filled with sterilized (boiled) water normal salt solution, *i. e.*, one tablespoonful of table salt to each gallon of water, should stand in the corner of the room with a cover over it to exclude dust. On the nearest stove an ample supply of boiling water must also be in readiness. A bucket or pail for slop had best be placed under and at the foot of the table. A chair for the anesthesist may occupy a place at its head, and beside it, if another small stand can be procured, it should occupy a convenient position, that on it may be placed the ether, a towel, dish for vomiting, a tongue-forceps and a bottle of restorative.

In addition, plenty of clean towels for wetting in antiseptic solution to place about the wound and for other uses during the operation must be supplied. A nail brush, soap and basins with warm water and water containing an antiseptic solution are best placed in an adjoining room for cleansing the hands of the surgeon and his assistants just before operating.

Tobacco chewing and smoking, noisy children, dogs and cats should all be interdicted.

When time permits the patient should have a bath before the operation, strong soap and warm water being used. Any necessary shaving, to, had better be done before the bath is taken, that all loose hairs may be entirely removed from the vicinity of the field of proposed operation.

While I have dwelt emphatically upon the importance of cleanly surroundings in order to obtain satisfactory results, I must add that, in my opinion, it is of far more importance to give scrupulous attention to the cleanliness of your own hands and those of our assistants. Yet I have often observed even the surgeon himself, after having completed a most careful antiseptic purification of the hands, seize some septic article, either of furniture or wearing apparel, or perhaps grasp the unwashed hand of some incoming acquaintance, and immediately engage in his surgical operation. We should always bear in mind that the chain of our surgical technique is only as strong as its weakest link, and that so gross an inattention to this most important part of it, the cleanliness of the hands, may result in the loss of our patient's life.

The Importance of Laboratory Methods in Diagnosis.

The fifth paper in a series upon this subject by Charles E. Simon, appears in the *Maryland Medical Journal.* After urging the necessity for examination of the feces in all obscure cases of gastro-intestinal disease, the reader is referred to Nothnagel's investigations as thus summarized:

"1. The appearance of pure mucus in the absence of fecal material in the dejecta may be regarded as indicating a catarrhal condition of the rectum, sigmoid flexure or the lower portion of the descending colon.

"2. A coating of scybalous masses with mucus is usually found in catarrhal conditions of the rectum and the descending colon.

"3. A chronic catarrh of the lower segment of the intestine, viz., rectum and descending colon, cannot be excluded, however, by the absence of notable amounts of mucus upon scybalous masses.

"4. The presence of hyaline particles of mucus, which are visible only with the microscope, and which are intimately mixed with the firm or thickly, mushy feces, in the absence of mucus visible with the naked eye, indicates a catarrhal condition of the upper portion of the large intestines, or of the small intestines.

"5. The presence of small yellow particles of mucus in the feces indicates disease of the small intestine.

"6. The ocucrrence of a typical bile pigment reaction, when the feces are treated with nitric acid, indicates the existence of increased peristalsis throughout the entire large intestine and the lower portion of the small intestine. From the character of the pigmented constituents of the feces, moreover, it is possible to state whether we are dealing with an increased peristalsis, *per se*, or whether we are dealing with a catarrhal condition of the small intestine.

"7. The presence of cylindrical epithelial cells, leucocytes and fat droplets stained with bile pigment, as also of the yellow particles of mucus already mentioned, indicates catarrh of the small intestine associated with increased peristalsis.

"8. The presence of an abnormally large number of muscle fibers, as also of starch granules and of fat, is associated with increased peristalsis of the small intestine.

"It is thus clear that a careful microscopical examination of the feces will not only indicate the existence of a catarrhal condition of the intestine, but approximately also its seat. If a positive result be reached we may assume that intestinal indigestion exists, as the presence of abnormally large quantities of mucus upon the intestinal mucosa will of necessity interfere with the prompt absorption of the products of salivary, gastric and pancreatic digestion and give rise to increased fermentative and putrefactive processes. The mere occurrence of rumbling, flatus, distension of the abdomen, constipation, anorexia, coated tongue, headache, etc., is not sufficient to establish the diagnosis; the feces must invariably be examined likewise, not to speak of the gastric contents.

"An examination of the feces is furthermore indicated in cases of so-called 'simple colic.' The great majority of these are in reality instances of cholelithiasis, and a careful sifting of the feces after an attack will not infrequently lead to the discovery of one or more little gallstones. The general practitioner should ever bear in mind the dictum of Riedel, the correctness of which has since been amply demonstated, that icterus does not occur in the great majority of cases of cholelithiasis, and that attacks of colic, which do not yield to treatment directed toward the stomach, should be transferred to the surgeon. Anthelmintics should never be administered unless an examination of the feces has revealed the presence of parasites or their ova."

The fumigating camp at Camp Low, Sandy Hook, will be transferred to Ellis Island. When the transfer is completed, the clothes of every immigrant who spends the night at Ellis Island will be thoroughly fumigated.

Medical Treatment of Cancer of the Stomach.

Much can be accomplished in relieving cases of this kind in which the physician is too apt to think himself impotent. A suitable diet is of great assistance, A. Robin asserts in the *Bulletin gen. de Theraputics.* It should include lean meat, tender fowls, gelatins, peptones and meat powders, to which can be added green and nitrogenous vegetables. All easily fermenting substances, such as bread, cheese, cabbage, kefir and sugar, should be strictly avoided and the stomach regarded merely as a passageway for the food, which is not digested at all until it reaches the intestines. Albumin and milk is usually digested with difficulty, and the latter is only indicated to increase the appetite, taken for a short while occasionally, in hematomesis and in incoercible vomiting. Three meals a day are enough, as the digestion is slow. The medical treatment is of course only palliative. To increase the appetite give:

1. Condurango, taken as a tonic; 15 grams cortex condurango alb. are boiled down in water from 250 grams to 150, filtered and sweetened with syrup; a tablespoonful of this is taken fifteen minutes before each meal.

2. Strychnine (tinct. nuc. vom., tinct. fab. St. Ignat.).

3. Theriaca wine.

4. One powder ten minutes before each meal as follows: Ammon. chlorat. 0.15; natrii. bicarb. 0.26; pulv. Dover, 0.10.

To assist digestion, have the patient sip a glass of a solution of 1.66 hydrochloric acid in 1,000 grams of water at the close of the meal, and during it take a powder: Pepsin, 0.50; maltin and pancreatin, aa 0.10. To diminish the amount of fermentations, prescribe sulf. sublim. or præcip. 0.15 to 0.20, or sulf. iodat. 0.25 to 0.50 in a powder at the end of each meal, or during the meal a large tablespoonful of a 1 in 300 solutions of fluorammonium. To arrest vomiting, prescribe:

1. Five to seven drops of the following solutions, five to ten minutes before eating: Picrotaxin and morph. mur. aa 0.05; atropin sulf. 0.01; aq. lauroceras. 10.0.

2. A teaspoonful of a cocain solution (0.15 in 150 water), a teaspoonful chloroform water or aq. menth.

3. A vesicans over the stomach.

4. A suppository on waking in the morning made of pulv. opii. 0.10; pulv. fol. bellad. 0.02; butyr. cacao q. s.

Hemorrhages can be combatted with ergot injections in severe cases, and in less severe, a tablespoonful of the following solution: Ergotin Bonjean, 4.0; acid gallic. 0.50; syr. terebinth. 30.0; aq. til. 120.0. Or, acid tanic 0.60; opii pur. 0.15; sacch. alb. 1.0; M. f. pulv. div. in dos. vi. One powder every four hours. To relieve the pains: For merely sensitiveness in the gastric region apply locally, empl. diachyl. empl. theria. aa 5 parts; extr. bellad., conii, hyoscyam. aa 1 part; ammon. aeetic. 2 parts. For severer pains prescribe one to four teaspoonfuls daily of the following: Ka. bromat. 6.0; morph. muriat. 0.50; aq. laurocer. 10.0; syr. æther 30.0; aq. tiliæ. 120.0. For very violent pain, morphine injections loco dolenti. In pyrosis, prescribe magn. decarb. 0.60; opii pur. 0.05; bismuth subnitr. 0.20; natr. bicarb. 0.75. M. f. pulv. tal. dos. no. xx. For constipation order one of the following pills to be taken every evening before retiring: Aloes 2.0; resin., jalap-scammon, turpeth veget. aa 1.0; extr. bellad., hyoscyam. aa 0.15; sap. amygdal. q. s. M. f. pill. no. xxv. Treatment of diarrdea: Electuar. diascordii, bismuth. subnitr. aa 4.0; f. boli No. xx. One every two hours. Or, in case of violent diarrhea, a pill every six hours made as follows: Cal. pulv. ipecac and extr. opii aa 0.01. The cachexia is best combatted by the administration of glycerin phosphates per os or subcutaneously; 5 to 6 grams of a solution of natr. glycerino-phosphoric. 0.20 to 20 water, injected each day. Robin had treated thirty-nine patients in this way and nineteen are still living; seven have gained in weight, among them patients from 50 to 72 years of age, who gained one kg. in the course of two to five weeks.

Asepsis and Anesthesia in Urethral Surgery.

Dr. John A. Wyeth, in the *New England Medical Monthly*, January, treats of the modern technic of urethral surgery, noting that two important branches of the subject are worthy of closer attention than they commonly receive. The first and most important is urethral asepsis. A urethra which is about to be incised should be made sterile, if this is possible, and the urine of such a patient should always be sterilized at least twenty-four hours before the operation, and should be kept sterile during the time of treatment. We recognize the fact that the so-called "urethral fever" is a form of septic infection. The administration of twenty drops of a mixture of 1 drachm of salol and 2 drachms of oil of gaultheria, three or four times a day, will sterilize the urine within twenty-four hours. "It is also claimed that the administration of boracic acid, 5 grains four or five times a day, will effect the same result, but I have used the first formula with such satisfaction that I have never tried the boracic acid. We are indebted to the late Prof. E. R. Palmer of Louisville, Ky., for popularizing this important point in treatment. In addition to this, the urethra should be irrigated with permanganate of potash, 1-3000 for five minutes before the operation, or it should be thoroughly 'ballooned' with this antiseptic solution by using the ordinary conical syringe introduced at the meatus, and the canal thoroughly distended with the fluid. This should be repeated three or four times, and a sufficient pressure employed to overcome the resistance of the cut-off muscle, in this way reaching the entire canal. The second point is the question of anesthesia. The vast majority of all strictures of the urethra can be treated practically without pain with cocain anesthesia. From the meatus to the cut-off muscle, the urethra can be anesthetized by using from 1 to 3 drachms of a 2 or four per cent. solution. I give varying quantities and strengths of solution, because no given prescription would fit every case. It is my rule to study carefully the susceptibility of every new patient to this agent, and disregard of this rule has given the unfortunate results that now find their way into the journals. When the entire urethra is injected, 1 drachm of a 2 per cent. solution should first be employed, and the degree of susceptibility of the patient, as well as the anesthetic effect produced, can be ascertained in five or ten minutes. If the anesthesia is incomplete and the patient shows no susceptibility to the drug, another drachm of the same or a stronger solution may be injected. It is also very important to remember that a patient is much more susceptible to the absorption of cocain when it is employed for the introduction of sounds for the first few times after, than at the time of the operation, for the simple reason that an incision, more or less extensive, has been made, which incision is covered with granulation tissue, rich in capillaries and ready and capable of absorbing under pressure a considerable quantity of cocain. Anesthesia of the membranous portion of the urethra may be obtained by carrying the Keyes-Ultzman syringe points down to the cut-off muscle, pushing it slightly within, and injecting 10 to 15 minims of a 4 per cent. solution. Anesthesia beyond the cut-off muscle is practically impossible, for the reason that the urine is in contact with this part of the urethra and so dilutes the cocain as to make it practically inefficacious. In meatotomy a few crystals applied just within the meatus or 10 minims of a 6 per cent. solution injected, limiting the application by digital closure of the canal one inch behind the opening, will effect complete anesthesia in division of the meatus or of an organic scricture here."

Is Animal Life Possible in the Absence of Bacteria.

Nature says: "Some ten years ago Pasteur, in one of those 'causeries du laboratoir' which those who were privileged to take part in will never forget, discussed with the

young scientific men around him the interest which would attach to the nourishment of an animal from its earliest existence with sterilized food under conditions which would insure the absence of all microbial life. 'Sans vouloir rien affirmer,' he added, 'je ne cache pas que j'entreprendrais cette etude, si j'en avais le temps, avec la pensee preconcue que la vie dans ses conditions deviendrait impossible. . . . Que le resultat soit positif et confirme la vue preconcue que je mets en avant ou qu'il soit negatif et meme en sens inverse, c'est-a-dire que la vie soit plus facile et plos active, illy aurait un grand interet a tenter l'experience.'

"To decide this question, Messrs. George Nuttall and H. Thierfelder have carried out elaborate experiments in the Hygienic Institute of the Berlin University, with young guinea-pigs removed from the mother by means of the Cesarean operation. Every conceivable precaution was taken to prevent all access to bacterial life. The young guinea-pig was placed in a sterilized chamber, supplied with sterilized air, and it was fed exclusively upon sterilized milk. It had been supplied with food every hour, day and night, a process which so exhausted the investigators that at the end of eight days, when it had consumed 330 c.c. of milk, and to all appearances was in perfect health and spirits, it was killed.

"A microscopic examination of the contents of the alimentary canal revealed no bacteria whatever; aerobic and anærobic cultures in various media were further made of the intestinal contents and of the excreta; but in every case the culture tubes remained sterile, not a single colony made its appearance. Messrs. Nuttall and Thierfelder claim by these experiments to have proved conclusively that the presence of bacteria in the alimentary canal is not essential to vital processes, at any rate in the case of guinea-pigs; and they consider themselves justified in assuming that other animals, and also human beings, could similarly exist in the absence of bacterial life, as long as the food supplied is purely animal in character. Whether the conditions would be altered by the addition of *vegetable* food to the diet, they next endeavor to determine. In this series of experiments the food selected was so-called 'English' biscuits, containing about 7 per cent. nitrogenous material, 9 per cent. fat, 17 per cent. sugar, 58 per cent. of other non-nitrogenous matters, and 2 per cent. cellulose; these, together with the milk employed, were sterilized before use. The same rigorous precautions characterized these expeiments as the previous ones; more animals were, however, secured, and they were allowed to live longer. The weight of the animals was this time carefully noted, and during the ten days, during which the experiment lasted, one animal gained 23 gme. and another 11 gme. This calculation could only be an approximate one, as the experimental animals were not weighed when originally removed from the mother, and their initial weight was only arrived at by weighing the other guinea-pigs which were removed at the same time, but not experimented upon. Thus, in the case of vegetable substances, bacterial life is apparently also not essential for carrying on digestive processes. The authors made also as careful an examination as was possible with the limited amount of material at their disposal, of the urine, and state that aromatic oxyacids were undoubtedly present. This result they regard as confirmatory of E. Baumann's assertion that aromatic oxyacids may be elaborated independently of intestinal decomposition. To this point they intend, however, to return later; at present, further investigations are in progress with fowls, and the results will be awaited with the greatest interest, while immense credit is due to the authors for the ingenuity of their methods and the sacrificing laboriousness with which they have conducted the experiments.

The Influence of Food and Work Upon the Toxicity of the Urine.

La Riforma Medica.

Casciani, in a series of interesting researches, has studied experimentally the influence of alimentation, of special diets, of

excessive and moderate labor upon the toxicity of the urine in healthy human beings. As a result he has formulated the following conclusions:

1. The toxicity of the urine undergoes notable modifieations under the influence of labor and alimentation.

2. A vegetable diet diminishes the toxicity of the urine; in effect, the urine of individuals subjected to a vegetable regime and light work is not at all, or very slightly, toxic.

3. In individuals at rest, the urine of those on a mixed diet is more toxic than that of those on a strictly vegetable diet.

4. A meat diet increases the toxicity of the urine in diet proportion to the amount ingested, other conditions being equal.

5. Work exercises a greater influence upon the toxicity of the urine than alimentation does; this action is more marked when the labor is continuous and excessive.

6. An excessive meat diet, or excessive work, each cause a hypertoxicity of the urine, and may give rise to the phenomena of auto-intoxication.

Case of Tuberculosis Cured by Cancrum Oris.

Hunter McGuire, M.D., LL.D., Professor of Clinical Surgery University College of Medicine, Richmond, Va., in the Bi-Monthly Bulletin of the University College of Medicine.

Miss P., of Abingdon, Va., was brought to my private hospital, November 9, 1895. She had a hacking cough, enlargement of the glands of the neck, and consolidation of the apex of one lung. I diagnosed phthisis pulmonalis, prescribed constitutional remedies, and advised her being taken to some suitable climate for the winter.

Before she could make arrangements to leave the hospital she had a severe chill, followed by high fever and a very sore throat. In a few days she developed a typical case of noma, or cancrum oris. The disease attacked the left cheek and when the slough separated, an opening was left as large as a silver dollar, exposing the teeth and rendering feeding difficult. There was high fever, typhoidal delirium and great prostration.

The wound was cauterized and disinfected, and heroic measures used to feed and stimulate the patient, but the symptoms grew worse and little hope of recovery was given to the relatives.

Finally, as a resort, I began the use of protonuclein, giving the tablets internally and dusting powder on the wound. An immediate improvement followed, and after a long and trying convalescence the patient was able to return home.

A year later she returned to the hospital to have a plastic operation done to lessen the deformity of the scar, and when she first entered my office I scarcely recognized the healthy, vigorous woman as my former tuberculous patient. The enlarged cervical glands had disappeared, her lungs were clear, her cough was gone. She had been cured of tuberculosis by the attack of cancrum oris. I have no explanation to offer for the result, but trust the clinical fact may prove of interest to the pathologist.

News Clippings.

Columbus, O., is trying to secure the 1898 meeting of the American Medical Association.

Kalamazoo, Mich., has a lady M.D., who is an inmate of the nunnery, and practices regularly in the convent, both as physician and surgeon.

The Prussian Government has voted to the Ministry of Public Instruction fifty thousand marks for investigations with the Rontgen rays.

The Alpha Chapter of the Phi. Sigma Psi Medical Fraternity was organized in Columbus, O., last month. The membership is to be very exclusive.

The New York Board of Health has recently condemned fifty tenements, several of which are to be demolished, owing to their menace to health. The owners will receive just compensation from the city.